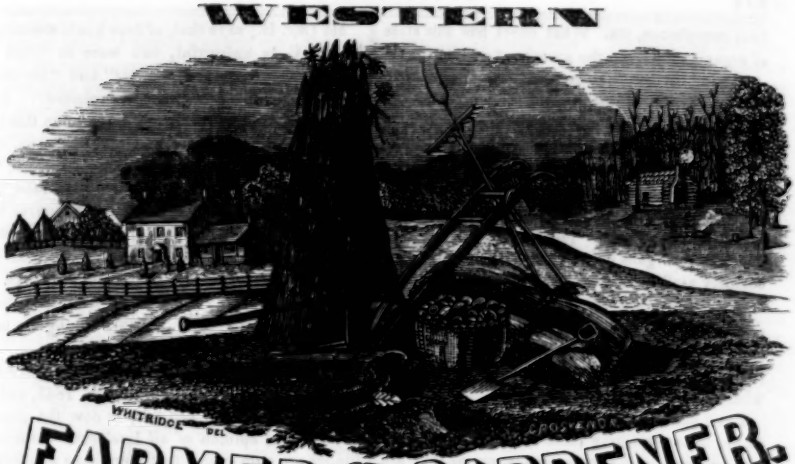

Vol. II. CINNCINATI, O,. SEPTEMBER 15, 1846. No. 18.

EDITED BY
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S. V. B. NOEL, *Publisher and Printer.*

WESTERN FARMER AND GARDENER.

CINCINNATI, TUESDAY, SEPTEMBER 15, 1846.

NEW PUBLICATIONS.

COMMON SCHOOL ADVOCATE. If any thing that we can say would do it, this paper, just started at the Capital of Indiana, should be distributed in every county of the State. We are sadly deficient in that grand element of prosperity *Common School education.* Hitherto nobody has made it a special business to look after the interests of our public schools. We hope a new day has dawned. The gentleman who conducts the Common School Advocate, seems to be well qualified to manage the work, and we know him to be deeply interested in the prosperity of our schools. We appeal to all our readers, as friends of good and sound education, to do what they can to circulate the "Advocate" in their neighborhoods. We are more than pleased with this first number; and if the volume is continued with the same spirit, and fulness of information and vigor of appeal, we shall be in favor of having it bound and put as a part of the public property of every school district in the State.

OHIO SCHOOL JOURNAL. *Kirkland, O.* Asa D. Lord, editor. Another excellent school Journal; which, although especially devoted to Ohio, is filled with matter of general interest. We hope to make the Farmer & Gardener better by availing ourselves of both of these works, whose appearance, we would fain hope, is auspicious of better days for the cause of education.

TENNESSEE FARMER. Mr. Foster, for a time connected with the Farmer and Gardener, at Cincinnati, part of the time as illustrator and then as editor, has assumed the charge of the Tennessee Farmer, Nashville. This first number is eminently respectable, and we promise ourselves both pleasure and advantage in an exchange.

THE STRAWBERRY CONTROVERSY.

No man will deny that in their cultivated state, strawberries are found, in respect to their blossoms, in three conditions: first, blossoms with stamens alone, the pistillate organs being mere rudiments; second, blossoms with pistillate organs developed fully, but the stamens very imperfect, and inefficient; third, blossoms in which staminate and pistillate organs are both about equally developed.

There are two questions arising on this state of facts; one, a question of mere vegetable physiology, viz: is such a state of organization peculiar to this plant originally, or is it induced by cultivation? The other question is one of eminent prac-

tical importance, viz: What effect has this state of organization upon the success of cultivation?

Passing by the first question, for the present, we would say of the second that, a *substantial* agreement has, at length, been obtained. It is on all hands conceded that staminate plants, or those possessing only stamens, and not pistillate organs, are unfruitful. Any other opinion would now be regarded as an absurdity. It is equally well understood that pistillate plants, or those in which the female organs are fully, and the male organs scarcely atall developed, are unfruitful. No one would attempt to breed a herd of cattle from males *exclusively*, or from *females;* and, for precisely the same reason, strawberries cannot be had from plants substantially male, or substantially female, where each are kept to themselves.

But a difference yet exists among cultivators as to the facts respecting those blossoms which contain *both* male and female organs, or, as they are called, *perfect* flowering plants.

Mr. Longworth states, if we understand him, substantially, that perfect-flowering varieties will bear but moderate crops, and, usually, of small fruit.

On the other hand, Dr. Brinkle, whose seedling strawberries we noticed in our last number, Mr. Downing, and several other eminent cultivators adopt the contrary opinion, that, *with care*, large crops of large fruit may be obtained from perfect-flowering plants. This question is yet, then, to be settled.

It is ardently to be hoped that, hereafter, we shall have less premature and positive assertion, upon unripe observations, than has characterized the early stages of this controversy. We will take the liberty of following Mr. Hovey in his Magazine, between the years 1842 and 1846, not for any pleasure that we have in the singular vicissitudes of opinion chronicled there, but because an eminent cultivator, writer, and editor of, hitherto, the only horticultural magazine in our country, has such influence and authority in forming the morals and customs of the kingdom of Horticulture, that every free subject of this beautiful realm is interested to have its chiefs men of such accuracy that it will not be dangerous to take their statements.

In 1842, Mr. Longworth communicated an article on the fertile and sterile characters of several varieties of strawberries for Mr. Hovey's Magazine, which Mr. H. for subject matter, endorsed. In the November number, Mr. Coit substantially advocated the sentiments of Mr. L.; and the editor, remarking upon Mr. Coit's article, recognized distinctly the existence of male and female plants.

He (Mr. H.) says that, of four kinds mentioned by Mr. C. as unfruitful, two were so "*from the want of staminate* or *male plants;*" and "the cause of the barrenness *is thus easily explained.*" And he goes on to explain divers cases upon this hypothesis'; and still more resolutely he says, that all wild strawberries have not perfect flowers; "in a dozen or two plants which we examined last spring *some were perfect* (the italics are ours) having both stamens and pistils; *others, only pistils*, and *others, only stamens;* thus showing that the *defect, mentioned by Mr. Longworth, exists in the original species.*" He closes by urging cultivators to set rows of early Virginia among the beds for the sake of impregnating the rest.

Mr. Hovey's next formal notice was exactly one year from the foregoing, Nov. 1843, and it appears thus: "We believe it is now the generally received opinion *of all intelligent cultivators* (italics are ours again) that there *is no necessity of making any distinction in regard to the sexual character of the plants when forming new beds. The idea of male and female flowers*, first originated, we believe, by Mr. Longworth, of Ohio, is now considered *as exploded.*" Such a sudden change as this was brought about, he says, by additional information received during that year by means of his correspondents, and by more experience on his own part. He says nothing of male blossoms and female blossoms, *which he had himself seen in wild strawberries.* Mr. Hovey then assumed the theory that *cultivation*, good or bad, is the cause of fertile or unfertile beds of strawberries, and he says: "in conclusion, we think we may safely aver, that there is not the least necessity of cultivating *any one strawberry near another* (our italics) to ensure the fertility of the plants, *provided* they are under a proper state of cultivation."

Mr. Hovey now instituted experiments, which he promised to publish, by which to bring the matter to the only true test; and he, from time to time, re-promised to give the result to the public, which, thus far, we believe, he has forgotten to do.

His magazine for 1844 opens, as that of 1843 closed; and in the first number he says, "the oftener our attention is called to this subject, the more we feel confirmed in the opinion that the theory of Mr. Longworth is entirely unfounded; that there is *no such thing as male and female plants*, though certain causes may produce, as we know they have, fertile and sterile ones."

Nevertheless, in the next issue but one this peremptory language is again softened down, and a doubt even appears, when he says, "If *Mr. Longworth's theory should prove true &c.*" We, among others, waited anxiously for the promised exper-

iments; but if published we never saw them. The subject rather died out of his Magazine until August 1845 when, in speaking of the Boston Pine, a second fine seedling of his own raising, he is seen bearing away on the other tack, if not with *all* sails set, yet with enough to give the ship headway in the right direction: "Let the causes be what they may, it is sufficient for all practical purposes, to know, that *the most abundant crops* (italics ours) can be produced by planting some sort abounding in *staminate* flowers, in the near vicinity of those which do not possess them." P. 293. And on p. 444 he reiterates the advice to plant near the staminate varieties. In the August number for 1846, p. 309, Mr. Hovey shews himself a thorough convert to Mr. Longworth's views, by endorsing, in the main, the report of the committee of the Cincinnati Horticultural Society. We hope after so various a voyage, touching at so many points, that he will now abide steadfast in the truth.

We look upon this as a very grave matter; not because the strawberry question is of such paramount, although it is of no inconsiderable, importance; but it is of importance whether accredited scientific magazines should be trustworthy; whether writers or popular editors should be responsible for mistakes entirely unnecessary. We blame no man for vascillation while yet in the process of investigation, nor for coming at the truth gradually, since this is the necessity of our condition to learn only by degrees, and by painful siftings. The very first requisite for a writer is, that he be worthy of trust in his statements. No man can be trusted who ventures opinions upon uninvestigated matters; who states facts with assurance which he has not really ascertained; who evinces rashness, haste, carelessness, credulity, or fickleness in his judgments. The question of perfect or imperfect blossoms depends upon the simplest exercise of eyesight. It requires no measurements, no process of the laboratory, no minute dissections or nice calculations; it requires only that a man should *see* what he *looks* at.

When a boy, playing "how many fingers do I hold up," by dint of peeping from under the bandage, we managed to make very clever guesses of how many lilly fingers some roguish lassie was holding in tempting show before our bandaged eyes, but some folks are not half so lucky with both eyes wide open and the stamens and pistils standing before them.

If such latitude is permitted to those who conduct the investigations peculiar to horticulture. who can confide in the publication of facts, observations or experiments?. Of what use will be journals and magazines? They become like chronometers that will not keep time; like a compass that has lost its magnetic sensibility; like a guide who has lost his own way and leads his followers through brake, and morass, and thicket, into interminable wanderings. Sometimes, the consciousness of faults in ourselves, which should make us lenient toward others, only serves to produce irritable fault-finding. After a comparison of opinions and facts, through a space of five years, with the most distinguished cultivators, east and west, Mr. Longworth, is now, universally admitted to have sustained himself in all the essential points which he first promulgated,—not *discovered*, for he made no claims of that sort. The gardeners and the magazines of the East have, at length, adopted his practical views, after having stoutly, many of them, contested them.

It was, therefore, with unfeigned surprise, that we read Mr. Hovey's latest remarks in the September number of his Magazine, in which, with some asperity, he roundly charges Mr. Longworth with manifold errors, and treats him with a contempt which would lead one, ignorant of the controversy, to suppose that Mr. Hovey had never made a mistake, and that Mr. Longworth had been particularly fertile of them. Thus: "Mr. Longworth's remarks abound in so many errors and inconsistencies, that we shall scarcely expect to notice all. "Another *gross assertion*," &c. Referring to another topic, he says: "This question, we therefore, consider as satisfactorily settled, without discussing Mr. Longworth's conflicting views about male and female Keen's &c."

This somewhat tragical comedy, is now nearly played out, and we have spoken a word just before the fall of the curtain, because, as chroniclers of events, and critics of horticultural litterature and learning, it seemed no less than our duty. We have highly appreciated Mr. Hovey's various exertions for the promotion of the art and science of horticulture, nor will his manifest errors and short comings in this particular instance disincline us to receive from his pen whatsoever is good.

We hope that our remarks will not be construed as a defence of western men or western theories, but as the defence of the truth and of one who has truly expounded it, though, in this case, the theory and its defender happen to be of western origin. Whatever errors have crept into Mr. Longworth's remarks should be faithfully expurgated; and perhaps it may be Mr. Hovey's duty to perform the lustration. If so, courtesy would seem to require that it should be done with some consciousness that through this whole controversy Mr. Long-

worth is now admitted to have been right in all essential matters; and if, in error atall, only in minor particulars; while Mr. Hovey, in all the controversy, in respect to the plainest facts, has been changing from wrong to right, from right to wrong, and from wrong back to right again. We do not think that the admirable benefits which Mr. Longworth has conferred upon the whole community by urging the improved method of cultivating the strawberry, has been adequately appreciated. We still less like to see gratitude expressed in the shape of snarling gibes and petty cavils.

We will close these remarks by the correction of a matter which Mr. Downing states. While he assents to all the *practical* aspects of Mr. Longworth's views, he dissents as to some matters of fact and philosophy and among others, to the fact that Hovey's seedling is *always* and *only* a pistillate plant. He thinks that originally it had *perfect* flowers, but that after bearing twice or thrice on the same roots the plants degenerate and become either pistillate or staminate. He says: "Hovey's seedling strawberry, at first, was a perfect sort in its flower, but at this moment, more than half the plants in this country have become pistillate."

Mr. Hovey himself states the contrary on p. 112 of his Magazine for 1844. He denies that there are two kinds of blossoms to his seedling, and says, "the flowers are all of one kind, with both pistils and stamens, *but the latter quite short and hidden under the receptacle.*" This is the common form of all *pistillate* blossoms, and shows, in so far as Mr. Hovey's observations are to be trusted, that, at its starting point and home, Hovey's Seedling was, as with us it now invariably is, so far as we have ever seen it, a pistillate plant.

AUTUMNAL MANAGEMENT OF FRUIT TREES.

Orchardists and cultivators of garden fruit will have need of all their skill to prepare tender fruit trees for winter. It is the misfortune, alike, of the English summers, and of ours in the west, that trees do not properly ripen their wood. But in Great Britain it is from the want of enough, and in America, from too much, summer. Our long and hot summers give two or three *separate growths* to fruit trees, and the last one is usually in progress at a period so late that severe frosts and freezings overtake the tree while yet in an excitable state, pushing new wood, and with a top quite unripened for severe frosty handling.

The present summer furnishes a fine type of western summers. The spring came in very properly, and at so late a period that the usual frosts, after the expansion of leaves, were avoided. The summer opened warmly and has continued with almost unvarying heat throughout. At the same time we have had frequent and copious rains.

We have before us, and shall next week publish Dr. Plummer's memoranda of the three summer months. By this statement the average temperature of June was 71° and the rain 6½ inches; of July, average noon heat, 80°, rain 3½ inches; of August, average noon heat 80°, rain 5½ inches. Nights were exceedingly warm. The day repeatedly opened and closed at 80°. Our thermometer on the north of our house, in a shady yard, stood for eight and ten days together between 94° and 100°; twice attaining the latter height.

Under such stimulus our pear, apple, and plum trees made their first growth by the first of July. They soon started into a second growth, which wound up during the last of August and the first of September, plum trees entirely shedding their leaves and standing as bare as in January. A third growth is now in progress. Nights are becoming cooler, the days are warm and moist, and it is probable that this new growth will continue late; and every wise cultivator should keep his eyes upon his trees.

Let orchards be examined when frosts begin to occur, and every *side-shoot, sucker*, or *water-sprout* cut cleanly out. These succulent, raw sprouts are the breeding-spots of disease. Cold-blight invariably manifests itself in them in the most positive form.

Garden trees, choice pears, and stone fruits, should, in addition to this operation, if still in growth at the last of September, receive a fall pruning. From the first to the middle of October, according to the season, cut off two-thirds of the new growth, or back to strong, ripe wood. It well known that the newest buds, near the extremity of young wood, are the most sensitive and apt to break and grow; whereas the buds near the base of a branch are dormant. It is the repose the older buds which makes fall pruning, if performed with judgment, so valuable. Because forces the tree to expend its energies in ripening its wood instead of making more, and it also tends to induce fruitfulness, by changing leaf-buds fruit-buds. The great art of fall pruning is to relieve the tree of its crude wood, *without causing its dormant buds to break.* If performed too early or if but the tips of the fine wood are removed, the new buds may break and side-shoots issue, leaving the tree worse off than before.

Young trees *just coming into bearing* should have their trunks protected. That there is change in the economy of a tree when it begins bear, is plain; and experience seems to teach the

trees are peculiarly tender at the time of this change; since they are far more apt to die when coming to fruit, than either before or afterward. Cherry trees, in this climate, and pear trees, should have brush, or corn-stalks, or straw, or matting, as is most convenient, so placed, from the ground to the branches, as to exclude the sun without excluding air. An hour's attention may save much regret.

PEARS GRAFTED UPON THE APPLE STOCK.

We do not think the pear does so well in any other way as on its own root. But it has been found extremely difficult to obtain the requisite stock. Pear seeds are scarce. When obtained the seedlings have proved intractable, and left the nurseryman, oftentimes, in the lurch. The first and best substitute for pear-stock, is the *root of the pear;* great quantities may be obtained when removing pear trees in the autumn from the nursery, and, also, without any injury to the trees, roots may be taken from old, bearing trees. These are to be grafted in the manner already described in our pages. Next to this, the quince stock is to be chosen. The pear is dwarfed upon it. In other words, the two are but imperfectly suited to each other, and the scion does not develop according to its original nature. But this very dwarfing adds something to the good qualities of the fruit, affords trees so small that, at eight feet apart, they make beautiful linings to a walk or border, and, moreover, brings the pear to its fruit several years earlier than if it were on its own bottom. It, on the other hand, the pear on quince is comparatively short-lived. The white-thorn has been tried as a stock and not without success, but it is hardly to be used except in extremities.

Last, and worst of all, comes the apple. The scion grows as vigorously upon the apple as upon the stock of its own species, and we do not know that the fruit deteriorates. But the trees seem to *have no constitution.* After a few bearings they seem struck with irremediable weakness, and soon turn down and die. Nurserymen ought not, therefore, to graft the pear upon the apple. To do so, if advised of the foregoing facts, can not be honest. Our attention has been called to the subject by some painful experience of our own.

PRESENT OF PEACHES.—Since we began to speak of sundry little perquisites of our editorial office, our readers seem to have grown gracious toward us, and we dwell not only under our own vine and fig-tree, but have the use of divers others that do not belong to us. A beautiful basket of peaches was, a few days since, brought to our door by a more beautiful Hebe; and although they were nominally given to our wife, we were not ignorant that the editor himself was meant. We should like to confound some eastern pomological sceptics with such beautiful specimens of the fruits of the *West.*

PRACTICAL USE OF LEAVES.

There are two facts in the functions of the leaf, which are worth consideration on account of their practical bearings. The food of plants is, for the most part, taken in solution, through its roots.—Various minerals—silex, lime, alumen, magnesia, potassa—are passed into the tree in a dissolved state. The sap passes to the leaf, the superfluous water is given off, *but not the substances which it held in solution.* These, in part, are distributed through the plant, and, in part, remain as a *deposit in the cells of the leaf.* Gradually the leaf chokes up, its functions are impeded, and finally entirely stopped. When the leaf drops it contains a large *per cent.* of mineral matter. An autumnal or old leaf yields, upon analysis, a very much larger proportion of earthy matter than a vernal leaf, which, being yet young, has not received within its cells any considerable deposit. It will be found also, that the leaves contain a very much higher *per cent.* of mineral matter, than *the wood of the trunk.* The dried leaves of the Elm contain more than eleven *per cent.* of ashes, (earthy matter,) while the wood contains less than two *per cent.*; those of the willow, more than eight *per cent.*, while the wood has only 0.45; those of the Beech 6.69, the wood only 0.36; those of the (European) Oak 4.05, the wood only 0.21; those of the Pitch-pine 3.15, the wood only 0.25 *per cent.**

It is very plain from these facts, that, in forests, the mineral ingredients of the soil perform a sort of *circulation*; entering the root, they are deposited in the leaf; then, with it, fall to the earth, and by its decay, they are restored to the soil, again to travel their circuit. Forest soils, therefore, instead of being impoverished by the growth of trees, received back annually the greatest proportion of those mineral elements necessary to the tree, and besides, much organized matter received into the plant from the atmosphere; soils therefore are gaininginstead of losing. If owners of parks or groves, for neatness sake, or to obtain leaves for other purposes, gathers the annual harvest of leaves, he will, in time, take away great quantities of mineral matter, by which the soil, ultimately, will be impoverished, unless it is restored by manures.

* *See Dr. Grey's Botanic Text Book, an admirable work, which every horticurist should own and study.*

Leaf-manure has always been held in high esteem by gardeners. But many regard it as a purely *vegetable substance*; whereas, it is the best mineral manure that can be applied to the soil. What are called vegetable loams, (not peat soils, made up principally, of decomposed *roots*,) contain large quantities of earthy matter, being mineral-vegetable, rather than vegetable soils.

Every gardener should know, that the best manure for any plant is the decomposed leaves and substance of its own species. This fact will suggest the proper course with reference to the leaves, tops, vines, haulm, and other vegetable refuse of the garden.

The other fact connected with the Leaf, is its function of *Exhalation*. The greatest proportion of crude sap which ascends the trunk, upon reaching the leaf, is given forth again to the atmosphere, by means of a particularly beautiful economy.—The *quantity* of moisture produced by a plant is hardly dreamed of by those who have not specially informed themselves. The experiments of Hales have been often quoted. A sun-flower, three and a half feet high, presenting a surface of 5.616 square inches exposed to the sun, was found to perspire at the rate of twenty to thirty ounces avoirdupois, every twelve hours, or seventeen times more than a man. A vine with twelve square feet exhaled at the rate of five or six ounces a day. A seedling apple-tree, with twelve square feet of foliage, lost nine ounces a day.‡

These are experiments upon very small plants. The vast amount of surface presented by a large tree must give off immense quantities of moisture. The practical bearings of this fact of vegetable exhalation are not a few. Wet forest-lands, by being cleared of timber, become dry; and streams, fed from such sources, become almost extinct as civilization encroaches on wild woods. The excessive dampness of crowded gardens is not singular, and still less is it strange that dwellings covered with vines, whose windows are choked with shrubs, and whose roof is overhung with branches of trees, should be intolerably damp; and when the good housewife is scrubbing, scouring and brushing, and nevertheless, marvelling that her house is so infested with mould, she hardly suspects that her troubles would be more easily removed by the axe or saw, than by all her cloths and brushes. A house should never be closely surrounded with shrubs. A free circulation of air should be maintained all about it, and shade trees so disposed as to leave large openings for the light and sun to enter. The unusual rains of the current season have produced so great a dampness in our residences that no one can fail to have noticed its effect, both on the health of the occupants, and upon the beauty and good condition of their household substance.

‡ *Lindley Horticulture*, p. 42–44. *Grey's Botany*, p. 131.

Sawdust for Flower-beds.—*Mr. Editor*: Wishing to refresh the soil of my flower-bed, I engaged a man to haul fresh leaf-soil for it. Instead of this, he spread a load of decayed and half decayed sawdust from an old mill. Many of my flowers died off, and none of them have done well. What was the cause of the evil, and how shall I remedy it? Florist.

The vegetable acid in the sawdust, probably, effected the injury complained of. A liberal dressing of lime or ashes will neutralize the acid, and when the sawdust is thoroughly decayed it will prove an advantage to the bed. Leaf-mold from the woods, the turf of old pastures, taken off about two inches thick and chopped up and pu into heaps until thoroughly decomposed, are the very best mannres for flower-borders. Next to these, comes old and mellow stable manure, which should be reduced very fine before it is spaded in.

COMMUNICATIONS.

OHIO EVER-BEARING RASPBERRY.

Spring Garden, near Cincinnati,
August 25th, 1846.

My Dear Sir:—Through the whole course of your editorial career, there runs such a vein of justice guided by descriminating judgement, that it is with reluctance I say a word in self defence or justification. I was more fully made to feel this in an editorial article in your 15th No., of the current vol., on "The Nursery Business." In that article you allude to the purchase (as you are pleased to say "from a very highly respectable nurseryman of Ohio,") of the *Royal George Peach*, which turned out to be *spurious*. The delicate manner in which you refer to the error, induces me as an act of justice to others, to acknowledge myself as the person alluded to. The circumstances under which I was deceived, are precisely similar to those under which you became the innocent disseminator. It is much to be regretted that with all possible care and vigilance, occasional errors will occur. It is impossible at all times to have access to bearing trees of all desirable sorts. The best we can do under such circumstances, is to resort to the most authentic sources, where every reasonable prospect exists in favor of correctness. When we are assured that this has been done, we may with propriety claim the justice and charitable tone of your article; how far we are entitled to its spirit is for the public to judge.

There is, however, too much disposition on the part of some editors and their correspondents, to judge of nurserymen as if they were a set of sharpers, whose only object is to fleece the public out of their money. Of this latter character your correspondent, J. T. P.'s article, on the "Ohio Everbearing Raspberry," in your last, (No. 16) favors very much. After I had read the article, with sur-

prise, lest I had mistaken the writer, I read it again with care. I then felt the whole to be a slander, for I remember that my little daughter had repeatedly saluted me with a well prepared saucer of these raspberries, when no other were in fruiting. But to confirm myself fully I went to the vines, and, I assure you, I regretted that you and your correspondent were not with me, I am sure the sight would have satisfied him of his error. I counted some bunches with from thirty-five to forty-eight berries in the various stages, from those just formed to maturely ripe, and most of the vines with an abundant supply of fruit in process of ripening. I think Mr. J. T. P. can himself never have seen the "Ohio Ever-bearing Raspberry," and hence he has been led to the conclusions, "that the plant was long known in other States before it was discovered in Ohio," and identical with the "Common Black Raspberry" of our forest, which abounds all over the West. If it is not "exclusively" a "native of Ohio," this is of no consequence; it does not, however, appear to have been known, until cultivated and noticed by the community of Shakers near Lebanon, Ohio, some years since. Permit me to adopt his own language and see how it sounds:—"Indeed, one is compelled to believe that either ignorance or policy has" induced him to keep "the real character of this plant out of view;" if he has or has not, I leave for those who know the "Ohio Ever-bearing" and the "Common Black Raspberry" to judge. I have them both growing, and I have never seen fruit on the latter after the June fruiting.

The true character of the "Ohio Ever-bearing Raspberry" is, that it fruits abundantly at the usual time in June, and then continues to throw up new wood from the roots, on the end of which it fruits through the summer, but owing to the dry and hot weather which usually exists in July and August, not so abundantly as from that time until checked by the frost. No one has ever pretended, that I have ever heard of, to imply by the term, "ever-bearing," that it bears the *whole year through*. If your correspondant has so understood it. he has indeed deceived himself, and if he will make himself known to me, I will, with pleasure, send him this fall a dozen plants of the genuine sort.

Respectfully yours,
A. H. ERNST.

We can heartily assure Mr. Ernst, that J. T. P. is the last man of our acquaintance who would, wilfully or carelessly, mistate in even a matter of the smallest moment. If he has fallen into error in this matter, it will be promptly repaired without doubt. Mr. Ernst would value the acquaintance of his unknown impugner, J. T. P. from great similarity of tastes; and if J. T. P. has a spare hour when next in Cincinnati, and does not call at Spring Garden, he will lose more than he would be willing to lose.

There appears to be two Royal George peaches, the one a cling, and the other a free-stone, and named, respectively, *Royal George Cling* and *Early Royal George*. We have no doubt that Mr. E. received, propagated and distributed *a* true Royal George; but not *the* Royal George of most general celebrity. Mr. Ernst does not need any assurance on our part of confidence in his great integty as a nurseryman. We cut from the Cincinnati Gazette, the following additional information upon the raspberry question:—*Ed.*

HORTICULTURAL SOCIETY.—At the Horticultural Society's rooms on Saturday last, Mr. Ernst exhibited a specimen of the Ohio ever-bearing or monthly raspberry vines, well loaded with fruit, both ripe and green. Attention was called to this exhibition more particularly, in consequence of a general belief, sanctioned by a late article in the Indiana Cultivator, that this variety of the raspberry does not yield fruit in sufficient quantity to render it worthy of cultivation, except as an object of curiosity. The quantity on the vines exhibited by Mr. Ernst, was as great as is usually found on the most prolific of the common kind, and the berries were larger and finer than any we have seen this season in our market. It must therefore be desirable to extend the cultivation of this variety of the raspberry, and it is worthy of the attention of our gardners as well as amateurs.

The is no such paper as the Indiana Cultivator. The Western Farmer and Gardner is meant.

We take the liberty of making an additional extract from a private letter of Mr. Ernst:

"But with all care and vigilance, the progress of positive knowledge in Pomology, owing to the thousand casualties to which experiments are subject, must of necessity be slow. I had fondly hoped to have brought to the test a hundred and fifty sorts of the pear ere this, but my fond expectations have unhappily been cut off, to a great extent, thus far, by that insidious enemy, the fire-blight, which continues its destructive ravages with unabated fury among my trees. In all our operations and disappointments we must exercise patient perseverance, and endeavor to exercise a charitable forbearance where unavoidable errors are committed. On this subject I have written you a long communication, and I hope in a spirit which will be deemed admissable in your magazine. There is much to be done, and we may as well spend our time in doing it, as to occupy it in charging each other with base designs. It is an ocean in which we shall all have need of a frequent recurrence to our charts, and land-marks without the danger of too much proficiency in our course."

WHEAT AMONG CORN.

The 14th No. of the Farmer and Gardener contains an article from the Michigan Farmer which recommends the sowing of wheat amongst corn.—On reading it, it occurred to me, that it would be well for me to communicate my observations on the subject; my proper avocations have occupied my time. until now, that it is so late, that neither good nor harm can be done the present season; but some observations may be offered for reflection against another season, and in that way some good may be done. Wheat amongst corn has always been a common practice here in Knox county. I know of two instances, and I have often heard of a third in an adjoining county, Sullivan, in

which this practice seems to be successful. One of ur old French farmers, Mr. P B., has a field of venty or more acres, along which it has been my t to pass some hundred or more times each year r the last 15 years. During this time this field is alternately been in corn and wheat, the wheat wed amongst the standing corn, and has always oduced fine crops, very good corn and good heat. But during all this time, nothing has been ken off of this field, but the ears of corn and eaves of wheat. It is a piece of level prairie. he corn is planted in four-feet rows. If broken wn by the wind, the corn is set up. Early in ctober the wheat is sowed and plowed in with small plow, four furrows in each row. Late in e fall the corn is gathered, husked on the stalk ; nd towards the end of winter the corn stocks are t down and left on the ground. After the wheat housed, the field is pastured until the next spring y stock remaining on it day and night. Under is management this field has certainly not dete-orated, and I am inclined to the opinion that it as improved. I have watched it for years, and m satisfied that the produce of corn and wheat ontinues above the average.

There is in the neighborhood, another who is elebrated amongst us as a good farmer, who lives omfortable, and is, I presume, most prosperous. Iis land is the very best of upland, heavy timber-d, beach, sugar, walnut and poplar land. It is saying of this gentleman, Mr. B., which is often epeated here, that with him wheat does best when owed amongst corn. This Mr. B., has rich new nd ; but he always has some of his fields in clo-er, which he pastures with hogs ; and thus un-oubtedly keeps up the fertility of his soil in such anner, that he cultivates, and successfully, the rgest sort of corn raised in this county.

These gentlemen are both very good farmers, hey plow deep; they work their corn thoroughly; nd they do all things at the right time.

If P. B. cut up his corn, took stalks and shucks ff the land, and if the stock, which was pastured n it, were taken off at night, undoubtedly it would eteriorate.

Those who have cultivated clover and pastured with hogs or cattle, know that the land becomes tocked with clover seed, which will germinate henever the proper condition occurs. If a clover eld is broken up, planted in corn, the clover will row amongst the wheat, nearly as thick as if it ad been sown. And, however, the growth of the lover may be kept under by the pasturage of the tubble, the roots will remain in the ground and ome of the stocks and leaves above all, with the anure from the stock pastured on it, to enrich he soil for another crop. In this manner, doubt-ess, the natural fertility of Mr. B.'s rich land is onstantly preserved, perhaps increased ; and un-ier such circumstances the corn may be a neces-ary preparation for the wheat. Besides, Mr. B. is too good a farmer and too sensible a man, to starve the goose that lays the golden egg for him. He takes the largest sort of ears and lots of them out of his corn field, but generally leaves all else. It is well known that on strong clay lands, wheat s apt to fall. This undoubtedly is, because on such land, there is not convenient for the wheat a quantity of silex proportionate to the other sorts of food at hand. Now there is in corn-stalks a large quantity of silex duly prepared for the wheat. The corn seems to have the faculty of extracting a sufficiency of silex from soils on which the wheat for want of this ability will fall. And if I am correct in this, this may be another reason why, with Mr. B., wheat amongst corn does best.

I have often heard of a Sullivan county farmer, on rich clay upland, who has his whole farm all the time in corn, wheat, and clover. He sows his wheat amongst the corn, and the clover he did sow on the wheat as long as necessary ; now it comes without sowing. This gentleman's neighbors continually tell me that his crops of corn, wheat and clover are always good, and as he and they think, are regularly improving. He too undoubtedly leaves his stock on the ground.

Excepting the above three cases, I do not know of any like regular success with wheat sown amongst corn. I often hear of good crops of wheat thus sown, but I more often hear of such crops failing; sometimes straw fallen, sometimes rusted, but more often both.

And excepting the above three cases, I do not know of any farm, *in an improving state*, on which the wheat is sown amongst corn.

Most generally those who sow wheat amongst corn cut it up, before or after the wheat is sown, shock it in the field and feed it out during the winter to stock. In other words, the whole produce of the corn field is taken off of the land. This may do on the corn fields of New England, corn fields of two and three and four acres, so small that it is practicable to manure them well ; but it is ruinous with our crops of twenty and thirty and more acres of corn. We cannot make the manure, and if we could we cannot command the labor that would be necessary to spread it. The offal of our crops, once taken off of the land cannot be returned to it. Land thus managed must become poorer each year.

If the corn is cut before the wheat is sown, and hence the liability to rust is increased. If the wheat is sown amongst the standing corn, it may be sown soon enough, but there are many other difficulties. Unless the land was well plowed in the spring it will not be in the proper state to nourish a crop of wheat; and unless the corn was well and properly worked so as to keep down the toads, it will not be possible to sow the wheat early nor to plow it regularly, hence the produce in quantity will be small and in quality irregular.

SAML. JUDAH.

VINCENNES, Aug. 24 1846.

LETTERS OF A COSMOPATITE.

PHILADELPHIA, June 6, 1846.

[This letter was put away so carefully in our Portfolio that it was forgotten in the regular series to which it belongs.—ED.]

Editor Far. & Gard.:—Boston and Philadelphia are close together although far asunder in distance. Eighteen hours are all that one spends upon the route, even though he should not select the most expeditious course of travel, and should stop in N. Y. city long enough to look round, see the fountain, the Astor House and Trinity church.

It is not a forte of mine, when a stranger in a strange place, to ask questions, and this must account for the inaccuracy or vagueness of many of my stories, and the almost entire absence of useful statistics. Upon this plan, I say as to Trinity

Church, that it is very, very high, with its stone steeple and cross; very, very noble with its large dimensions and perfect architecture, and very, very expensive with its ornamented interior, all of carved stone, curling and curving in wreaths and arches numberless, so that it no longer seems stone. One must, after a visit to this new and elegant edifice, have something of an idea of the style of cathedral architecture, of which the old world boasts so much, but which until now has not been seen in any elaboration, in this country. And owing to my plain, homely breeding, tho' I love to look at such a building and see such profuse, and extensive ornament, yet I would as soon think of worshipping in the hugh halls of the Mammoth Cave, or in the empty shells of ship-houses in the navy-yards, as in such a lofty, cold, dark, gloomy cavern of a house, where the voice is lost, or comes back to the speaker, as a scared child runs home at finding how large the world is.

It has however seemed to me a misnomer, to to call this extravagant edifice a "result of Christain enterprize and *benevolence*," when not one cent of contribution has been called for and when the whole labor has been to devise ways and means to consume the enormous revenues of this old and opulent parish. However, it sounds well and may tickle the worshippers ears, so let it pass.

Although I spent but eighteen days in Boston, I had the singular good fortune to see no less than three of the English steamships, in that time, viz: the Hibernia, the Brittania, and the Cambria; I think they were the three, though I cannot be sure, for no name was visible anywhere, and, as usual, no questions were asked to illicit information on these points.

Looking at the immense engines all cleaned and bright, I could not but think of how Watt or Fulton would stand in amazement to see the full grown fruit of the germ they themselves planted. The officers are too surly and the regulations are too strict to allow an inquisitive mind much chance for learning, unless pretty well up to guessing.—I went away from all of them, wishing that I was somebody big so that I might "have servants under me" and attentions paid to my dignified and honorable visit.

Descending flight after flight of stairs into these ships, and seeing wine cellars, and stoves, and provisions, and feeling the subter-*aqueous* coolness, and gazing at the mountain size and solidity of the engines, one can hardly believe himself *afloat* on such a facile element as water; it seems like deep vaults on land; and the rockings of the whole suggests amusing earth quakes, got up for the tranquil rocking of bady-dom. I would walk twenty miles to see those engines make one full active revolution, if for nothing else than to see so much dead metal tossed and danced about by the uneasy spirit-steam, and draw therefrom a moral that magnanimity and weight of character must dance most degradingly, if a man *steams up with spirits*. [That's a hard strain for a temperance lecture!]

There are in Boston, more revolutionary relics, and more living memorials of great men and patriots, than any in other city I have seen. There seems to be a spirit of veneration for antiquity, and ancient greatness, obtaining in Boston, that siezes upon each personal relic of olden time, and every monument of past greatness, and treasures it up for the curiosity and instruction of posterity. Hence, the associations of Boston with the past, are all bright and fresh, and at every turn, at every old house, and at every milestone the stranger is remin led of the glory, and the trials of this our *almost* oldest city.

It is granted, I believe, that Boston holds the greatest amount of monied capital, of any city in the Union, in proportion to its size; and hence this city is undoubtedly the centre of literature, taste and fine art, for the Union. Time would not serve me to tell of all the exquisite paintings, and stationary that grace the private galleries of the rich, and which to any stranger known or unknown, are open, freely and generously, with no no question or restraint, so that he be but a gentleman.

But let me desert Boston and tell of the splendid steamer *Oregon*, that plies between Stonington and New York, the same one that, a few weeks ago, was almost lost upon the rocks of Hell Gate. I suppose it to be a fact, that such a palace afloat, as this huge steamer, cannot not be found in the known world. Never, even on land, have I met with such gaudy, oriental magnificence as I find in the Ladies Saloon, and the cabins of this boat. She is in length over 300 feet, i. e. a long rifle shot from stem to stern, and then she is big, broad and heavy in proportion; 'tis worth twice the cost of the trip, to see her vast promenades, her gaudy and comfortable staterooms, and berths; her loaded supper tables—her silver ware, and, most of all, (in my eyes) her huge engine, that plays so silently and yet so efficiently. I suppose that she stands without a rival in the steamboat line, and probably will long remain absolutely at the head of all sea crafts, so far as size and elegance are concerned. She is too long to be guided with ease through the rocks of Hell Gate in low water, and it was in one of these attempts, that she was almost *lost*; being dammaged as it was, about ten thousand dollars worth. Every one traveling eastward ought to see this boat, for it is a real repaying curiosity.

T. K. B.

SELECTIONS.

SCRAPS.

Overgrown Wheat and Tender Straw.—Some highly cultivated farms, where dung only is used as dressing, having attainad an average of about 5 quarters wheat per aker, and finding it subject to lay from overgrowth, it is proposeed to check this overgrowth by burning or other means of reducing the richness of the soil, thus something like limiting the product to about 5 quarters per aker, a limit within that of cottage gardens and allotments, and which has been doubled even under the plough. Surely, then, there is room for trying other means of stiffening the straw and promoting the formation of grain, before taking measures to check the feltility of the soil. Salt is well known to produce both these effects; the wheats on our sea-board being noted for heavy ears, and thin stiff straw; and wheat will bear much salt, Johnson (not Johnstone) says 10 to 20 bushels per aker. Mild lime produces a like effect, but not caustic lime, on rich soils, where it can liberate ammonia. To check the overgrowth, therefore, and increase the grain, 10 or 12 bushels (say 6 to 7 cwt.) of salt, with twice as much mild

lime, where required, might be harrowed in upon the seed, or perhaps better top dressed on the young plant in spring, especially if winter proud; superphosphate of lime should conduce to the same result, its acidity retarding the stimulative action of ammonia on vegetation, and its phosphorus determining to the formation of grain; 2 cwt. per acre might be mixed with the salt, varying the quantities experimentally, on the small scale, as a guide and eventually we may hope attaining a stiff straw under crops much heavier than 5 quarters per aker. Special manuring is particularly applicable to cases of this kind; but my impression is that almost every crop might be improved by special top-dressing in its early growth. Alkaline silicates have a direct tendency to harden the stalk, but silicate of potash appears, from the experiments on record, to promote the growth of straw; of silicate of soda, which costs less, I have seen no reports; it might be tried at the rate of 1 cwt. per aker, mixed with the dressings above, but would be safest on quite a small scale.—*London Agric. Gaz.*

To Pull Flax.—The time when flax should be pulled is a point of much nicety to determine.—The fibre is in the best state, before the seed is quite ripe. If pulled too soon, although the fibre is fine, the great waste in scutching and hackling renders it unprofitable; and, if pulled too late, the additional yield does not compensate for the coarseness of the fibre. It may be stated that the best time for pulling is, when the seeds are beginning to change from a green to a pale brown color, and the stock to become yellow, for about two-thirds of its height from the ground. When any of the crop is lying, and suffering from wet, it should be pulled as soon as possible, and kept by itself. So long as the ground is undrained, and imperfectly levelled before sowing, the flax will be found of different lengths. In such case, pull each length separately, and steep in separate pools, or keep it separate in the same pool. If the ground has been thorough-drained, and laid out evenly, the flax will be all of the same length. It is most essential to take time and care to keep the flax even, like a brush, at the root ends. This increases the value to the spinner, and, of course to the grower, who will be amply repaid, by an additional price for his extra trouble. Let the handfuls of pulled flax be laid across each other diagonally, to be ready for the rippling.—*5th Report, Flax Society, London.*

Mode of Fixing Pencil Drawings.—We have received the following instructions on this subject from Mr. Christie, of Westmorland-place, City-road:—"Dissolve pale resin in spirit of wine; lay the pencil drawing on its face upon a sheet of clean paper, and brush the back of the drawing with the solution. This penetrates through the paper in a few minutes, and as the spirit evaporates the resin is deposited as a varnish on the drawing. This has the advantage of not cockling the paper, which aqueous solutions will do, and as the brush only passes over the back of the drawings on card, or any other substance too thick to be penetrated by the solution. In this case, a weak solution of isinglass may be placed in a shallow dish, the drawing being passed through it so as to wet every part without touching it with a brush.—*Pharmaceutical Journal.*

ON the PRINCIPLES of ARTIFICIAL MANURING.

BY BARON VON LEIG.

(*Continued from page* 271.)

The soil does not only serve the purpose of fixing the plants and their roots; it participates in vegetable life through the absorption of certain of its elements. If these elements are present in sufficient quantity and in appropriate proportions, the soil contains the conditions which render the plant capable of absorbing carbonic acid and ammonia from the air, which is an inexhaustible store-house for them, and renders their elements capable of being assimilated by their organism.

The agriculturalist must, therefore, confine himself to giving to the field the composition necessary to the development of the plants which he intends to grow; it must be his principal task to supply and restore all the elements required in the soil, and not only one, as is so frequently done; the ingredients of the air, carbonic acid and ammonia, the plants can, in most cases, procure without man's interference; he must take care to give to his field that physical condition which renders possible and increases the assimilation of these ingredients by the plant; he must remove the impediments which diminish their effect.

The favorable influence which bone earth, gypsum, nitrate of soda, exercise on the fields has induced many farmers to the belief, that in applying them they can dispense with manure or with the other elements of the soil; it requires, however, only little attention to see the great error of this opinion. We observe that the effect of these substances is not equal on all fields; in one place the amount of produce is increased by the lime, by the bone-earth, and by gypsum; in another country, or on other fields, these substances in no way favor vegetation. From this arises the contradictory views of farmers regarding these matters as manures. If one farmer thinks the liming of his fields quite indispensable for rendering them fertile,—another declares that lime produces no effect at all.

The reason of this difference is very simple. The examination of a soil, upon which lime has had no effect, shows that it was already rich in this substance; it further shows that its effect extends only to those kinds of soil in which lime is wanting, or in which it is found in too small a quantity, or in a condition which is not suited to its assimilation by the plant. Lime especially serves for resolving the silicates of alumina (clay,) and consequently it cannot fertilize soils in which clay is wanting, for instance, sandy soils. It must be apparent to every one, that on the calcareous and gypseous fields of France and England one half per cent. of gypsum or lime can have no influence at all on vegetation. This can be said with equal justice of bone ashes, and of every other mineral substance serving for the nourishment of plants.

If these substances exercise a favorable effect, some of the constituents of the soil or manure are restored, which are indispensable to the nourishment of plants, and which have been wanting in the soil. If this be the case the other bodies, equally necessary, must be present in sufficient quantity. On a field, in which sulphate of lime has acted favorably, and in which clover had been cultivated as fallow without it, the crop was 2200

pounds of clover hay, in which fifty-three pounds of potash were removed. On the same field, after it had been gypsumed, 8000 pounds of hay were produced, which contained 191 pounds of potash. If this potash had not been present in the soil,—the crop would not have been increased. On fields, which are richly provided with all the other mineral ingredients, with the exception of gypsum, the latter is applied with the greatest success. But if gypsum is present in the soil, the same effects are produced by ashes and lime, as is the case in Flanders. On fields, in which phosphate of lime is wanting, bone ashes increases the produce of grain, clover or grass, and on argillaceous soil, lime produces a decided improvement. All these substances act only on those fields which are defective in them, and if the other elements of the soil are present. The latter cause the former to come into action, and *vice versa*. The farmers, who thought that by using lime, gypsum, bone-earth, &c., they might dispense with animal manure, very soon observed that their fields deteriorated. They observed that after a third or fourth successive manuring with those simple substances the produce decreased; that, as is the common expression, the soil became tired of the manure, that at last the field scarcely produced the seed.

It is evident from this, what is the action of the mineral elements in the soil. If in fact, the first years, the produce of the soil had increased by the application of bone ashes, or by a single element of the manure—if this increase was dependent on the amount in the soil of the other mineral elements, a certain quantity of those was annually taken up by the plants and removed in the harvest, and a time must at last arrive in which it is exhausted by the repeated removal; the soil must become barren, because of all removed elements, only one or the other, and not all of them, in a right proportion, have been restored.

The right proportion of the supply is, however, the only true scientific basis of agriculture.

If we subject the fluid and solid excrements of men and animals to an exact analysis, and compare the elements of them according to their weight, some constant relations between these elements impress themselves upon the mind, the knowledge of which is of some importance.

If the excrements of an animal are collected with some care and left to themselves for some days, their nitrogen appears to have been converted more or less perfectly, into ammonia. In the fluid excrements, in the urine, the salts of the food, which are soluble in water, are formed in the form of alkaline carbonates, or of sulphates, phosphates, and other salts, with alkaline bases. In the solid excrements or fœces, silica, if it was contained in the food, earthly carbonates, and phosphates, are the principle ingredients.

The quantity of alkaline carbonates bears a certain proportion to the amylum, sugar, pectine, or the gum of the food. The urine of an animal which has been fed with potatos or turneps, is rich in alkaline carbonates; the potatoes however, consist principally of amylum; the chief ingredients of the turneps are sugar and pectine. The urine of a horse, which has been fed with hay and oats, is comparatively poor in alkalies, if compared with the former.

It is further shown, that the ammonia or the nitrogen of the excrements bears a certain proportion to the phosphates; the azote increases or decreases with the quantity of the phosphates in a manner that both can serve, as a measure for each other, although not quite as an accurate one. It is not quite accurate, because the gum and the amylum also contained a certain, although small, quantity of phosphate of lime, as has been proved in my laboratory.

The ammonia of the excrements is of course derived from the nitrogenous substances in the food; the phosphates are likewise constituents of the latter. In the composition of the food an equally constant proportion exists between both. A given weight of glutten or casein in peas or in grain always corresponds with a certain weight of phosphates; if the grain or the vegetable is rich in those azotic products of vegetable life, it is also rich in phosphates; if it is deficient in them, the quality of the latter decreases in an eqaul ratio.

As the amount of nitrogen in manure is a measure for its amount in phosphates, and as manure contains besides these also the other ingrediments of the soil which are required by the grain or by the other vegetables for their development, and taken up by them from the soil, it is easily conceived what was the cause of the error in regarding the azote of the manure as the principal cause of its efficacy. The reason was, that the ammonia of the manure is always accompanied by the mineral elements which affect its nourishing qualities, because they render its assimilation into the organism of the plant and its transition into a nitrogenous constituent possible. Without phosphates, and without the other mineral elements of the food of plants, the ammonia exercises no influence whatever upon vegetable life.

If it has been shown that the fertility of the soil depends on certain mineral substances; if the restoration of the fertility of exhausted fields by means of the excrements of man and animals depends upon their proportions of these matters; if the effect of the manures *accelerating* the vegetation depends upon their proportions of ammonia, it is clear that we can only dispense with the latter when we provide *all* efficacious elements exactly in those proportions and in that form most proper for assimilation by the vegetable organism in which they are found, in the most fertile soil or in the most efficacious manure.

According to our present knowledge of the effect of the constituent parts of manure, I feel convinced that it is indifferent to the plants from which source they are derived. The dissolved apatite (hposphate of lime) from Spain, the potash derived from the felspar, the ammonia from the gass works, must exercise the same effects on vegetable life as the bone earth, the potash, or the ammonia, which we provide in manure.

We live in a time when this conclusion is to be subjected to a comprehensive and accurate trial, and if the result corresponds with the expectations which we are entitled to make, if the animal excrements can be replaced by their efficacious elements, a new era of agriculture must begin.

I invite the enlightened farmers of England to unite with me for that purpose, and to lend me their aid. Whatever may be the result of these experiments, it is necessary for the future prosperity of agriculture that may be made. They will enrich us with a number of valuable facts—we shall ascertain where we have wasted efficacious

matters in the common course of farming—we shall acquire an exact knowledge of those substances which are necessary, and of those which are dispensable.

For a number of years myself and many young talented chemists have been occupied with the analyses of those mineral substances which are constituent elements of our plants of culture, and with the examination of the excrements of man and animals, as well as of a great number of soils acknowledged as fertile. These labors have been laid before the scientific world long since, but only a very confined application has been made of them in agriculture.

The farmer is by his position not in the condition to procure and to command the efficacious elements necessary for the restoration and increase of the fertility of his fields in a right proportion and suitable form. For this purpose, science and industry must combine their aid.

I have been fortunate to remove the difficulties which are opposed to the application of a mere mixture of the elements of manure. If we employ the different elements of manure exactly in those proportions in which they are necessary according to experience, for a rich crop of wheat, peas, turneps, potatos, and if, at the same time, we leave them in their common state, they do not produce that effect which we might have expected; the cause of this is, that the different elements of manure possess a very unequal solubility, the ammonia evaporates, the soluble elements are carried off by the rain, and the effect is more in proportion with the amount of those ingredients of the manure which are less soluble.

I have found means to give to every soluble ingredient of manure, by its combination with others any degree of solubility, without altering its effect on vegetation. I give, for instance, the alkalies in such a state as not to be more soluable than gypsum,* which as is well known, acts through many years, as long as a particle of it remains on the aker.

The mixture of the manure has been adapted to the mean quantity of rain in this country; the manure which is used in summer has greater degree of solubility than that used in winter. Experience must lead to further results, and in future the farmer will be able to calculate the amount of produce of his fields, if temperature, want of rain, ect., do not oppose its coming fairly into action.

I must, however, observe that the artificial manures in no way alter the mechanical condition of the fields, and they do not render a heavy soil more accessible to air and moisture. For such fields, the porous stable manure will always have its great value; it can be given together with the artificial manure.

All manure which is to be used during next winter contains a quantity of ammonia corresponding with the amount of nitrogen in the grain crops which are to be grown. Experiments, in which I am at present engaged, will show whether in future times the costs of this manure can be greatly lessened by excluding half or the whole amount of ammonia.† I believe that this can be accomplished for many plants, as for clover and all very foliaceous vegetables, and for peas and beans; but my trials are not so far advanced as to prove the fact with certainty.—*Cultivator.*

Giessen University, 1845.

* Equal parts of carbonate of potash and carbonate of lime, (chalk) melted together will dissolve in 460 parts of water. Increase of chalk lessens, while larger proportions of the other ingredient increases the solubility. E. N. H.

† Dr. Krocker, in this laboratory, has determined in the course of the last term, the ammonia present in most soils of great varied physical properties. The results are still unpublished; but he remarked to me one day that if the ammonia per centage of the soil then in hand, be estimated as constant through a depth of one foot, the ammonia in an aker was about 8,000 lbs!

Even in sand destitute of soluble mineral salts, and nearly so of organic matter he found a per centage that was startling, Indeed, the sum of his results is that the ammonia is in nearer relation to the moisture than to anything else.

I found ammonia in the glaciers that come down from heights of 14,000 feet above the level of the sea—from near the summit on Mt. Blanc. Even at that height the ammonia is still in quantity that may be weighed. Every rain and snow storm brings this ingredient to the earth. Every soil that can retain its moisture will also retain the ammonia that descended with it. Hence one cause of superiority of a soil containing much decayed vegetable matter or much humus. It enables it to hold moisture, as well as furnish a source of carbonic acid. A rod dipped in muriantic acid and held near the surface of a handful of moist soil will cause white fumes to rise, occasioned by the combination of the ammonia with the muriatic acid. A gentle breath directed along the surface of the earth experimented with, will render the fumes more apparent. E. N. H.

Narrow circumstances are the most powerful stimulants to mental expansion; and the early frowns of fortune the best security for the final smiles.

There is a deal of philosophy in a dog's tail. It is as great a tell-tale as a lady's face. If a dog is pleased his tail is immediately in a waggish humor—if he is afraid it slopes—if angry it "sticks out." You can tell the character and disposition of a dog by his tail, as well as Fowler can decypher yours from the "bumps."

KILL OR CURE.—"Tom, a word with you." "Be quick then, for I'm in a hurry." "What did you give your sick horse t'other day?" "A pint of turpentine." John hurries home, and administers the same dose to a favorite hunter, which, strange to say, drops off defunct in half an hour. His opinion of his friend Tom's veterinary ability is somewhat staggered. He meets him the next day. "Well, Tom!" "Well, John, what is it?" "I gave my horse a pint of turpentine, and it killed him as dead as Julius Cæsar." "So't did mine."

DEAN SWIFT says a woman may knit her stockings, but not her brow; she may darn her hose, but not her eyes; curl her hair, but not her lips; thread her needle, but not the public streets.

CINCINNATI OBSERVATORY.

We do not believe that the world can show a paralell to the Cincinnati Observatory. Greater structures, more liberal endowments, more numerous instruments, and a larger corps of operators may exist. But when, before, was there a body of men such as the list of stockholders exhibits, combined to build an *Observatory?* Did the merchants and mechanics of Great Britain, or the manufacturers and day laborer of France ever perform a like achievment. An European *Savan* would regard such an Astronomical Society with about the same astonishment that he would some extraordinary stellar variation, or some new discovery among the nebulæ.

We extract the whole account as given by Prof. Mitchell, as being worthy of a place among the *memorabilia* of the age.—*Ed.*

THE CINCINNATI OBSERVATORY.

An historical sketch of the building of this institution will be given in the succeeding numbers of the Sidereal Messenger, but it has been thought that a summary account of the erection of the building, and the difficulties encountered in the accomplishment of this object might with propriety precede a more detailed history of the institution.

On the 8th of November, 1843, the corner stone of the Observatory was laid by John Quincy Adams, in the presence of a vast multitude, with appropriate ceremonies, and followed by the delivery of an address replete with beauty and eloquence. The season was too far advanced to permit any thing to be done towards the erection of the building during the fall; and, indeed, it was not the intention of the Board of Directors to proceed with with the building until every dollar required in payment for the great telescope should have been remitted to Europe. At the time of laying the corner stone, but 3,000 dollars out of 9,500 had been paid. This was the amount required in the contract, to be paid on signing, and the remaining sum became due on finishing the instrument.

The contract having been made conditionally in July, 1842, it was believed that the great Refractor would be shipped for the United States, in June, 1844, and to meet our engagements the sum of 6,500 dollars, must be raised.

This amount was subscribed, but, in consequence of commercial difficulties, all efforts hitherto made to collect it had been unavailing, and in February, 1844, the Board of Control solicited the Director of the Observatory to become the general agent of the Society; and to collect all old subscriptions and obtain such new ones as might be necessary to make up the requisite sum. The accounts in the hands of the previous collector were accordingly turned over to me, and a systematic effort was made to close them up. A regular journal was kept of each day's work, noting the number of hours employed, the persons visited, those actually found, the sums collected, the promises to pay, the positive repudiations, the due bills taken, payable in cash and trade, and the person onwhich I was *requested to call again.* These intervals extended from a week or ten days to four months. The hour was in general fixed, and when the day rolled round, and the hour arrived, the agent of the Society presented himself and referred to the memoranda. In many cases another and another time was appointed, until, in some instances, almost as many calls were made as there were dollars due.—By systematic perseverance, at the end of some forty days, the sum of 3,000 dollars was paid over to the treasurer as the amount collected from old subscribers. Nearly 2,000 dollars of due bills had been taken, payable in carpenter's work, painting, dry goods, boots and shoes, hats and caps, plastering, brick-laying, blacksmith's work, paints and oils, groceries, pork-barrels, flour, bacon, and lard, hardware, iron, nails, &c., in short in every variety of trade, materials, and workmanship.—The due bills in cash brought about 500 in the course of the next thirty days, and a further sum of 3,000 dollars was required for the last remittance to Europe.

It was determined to raise this amount in large sums from wealthy and liberal citizens who had already become members of our Society. The list first made out, and the sums placed opposite the names of each person, is now in my possession. On paper the exact amount was made up in the simplest and most expeditious manner; eight names had the sum of 200 dollars opposite them, ten names were marked 100 dollars each, and the remaining ones, 50 dollars each. Such was the singular accuracy in the calculation, that, when the theory was reduced to practice, it failed in but one solitary instance. One person, upon whom we had relied for 200 dollars, declined absolutely, and his place was filled by another.

I called on one of the eight individuals marked at 200 dollars, and, after a moment's conversation, he told me, that in case 100 dollars would be of any service to me, he would gladly subscribe that amount. I showed him my list, and finding his name among those reckoned at 200 dollars, he remarked that he would not mar so beautiful a scheme for the sum of 100 dollars, and accordingly entered his name in its appropriate place.

At a meeting held in May, by the Board of Control, the treasurer reported that the entire amount was now in the treasury, with the exception of 150 dollars. The board adjourned to meet on the same day of the following week, when the deficiency was reduced by the agent to 25 dollars, and on the same day an order was passed to remit the entire amount to Baring & Brothers, London, to be paid to the manufacturer on the order of Dr. J Lamont, of Munich, to be given on the packing of the instrument. The last 25 dollars was obtained, and placed in the treasurer's hands, immediately on the adjournment of the Board. Thus was completed, as was supposed, by far the most difficult part of the enterprise. All the cash means of the Society had now been exhausted, about eleven thousand dollars had been raised, and to extend the effort yet farther, under the circumstances, seemed to be quite impossible. Up to this time nothing had been done towards the building, and after paying for the instrument not one dollar remained in cash to commence the erection of a building which must cost at the lowest estimate, five or six thousand dollars.

Some two or three thousand dollars had been subscribed, payable in work and materials. Owing to a slight change in the plan of the building, the foundation walls already laid in the fall of 1843, were taken up and relaid. Finding it quite impossible to induce any master workman to take the contract for the building with the many contingencies by which our affairs were surrounded, I determined to hire workmen by the day, and superintend the erection of the building personally. In attempting to contract for the delivery of brick on the summit of Mount Adams, such an enormous price was demanded for the hauling, in consequence of the steepness of the hill, that all idea of a brick building was at once abandoned, and it was determined to build of limestone, an abundant supply of which could be had on the grounds of the Society by quarrying. Having matured my plans, securing the occasional assistance of a carpenter, about the beginning of June, 1844, I hired two masons, one of whom was to receive an extra sum for hiring the hands, keeping their time, and acting as the master workman. One tender to these workmen constituted the entire force with which I commenced the errection of a building, which if prosecuted in the same humble manner, would have required about twenty years for its completion. And yet our title bond required that the building should be finished in the following June, or a forfeiture of the title by which we hold the present beautiful scite must follow. My master mason seemed quite confounded, when told that he must commence work with such force. In the outset, difficulties were thick and obstinate. Exorbitant charges were made for delivering lime. I at once commenced the building of a lime kiln, and in a few days had the satisfaction of seeing it well filled, and on fire; true it caved in once or twice, with other little accidents, but a full supply of lime was obtained and at a cheap rate.

Sand was the next item, for which the most extravagant charges were made. I found this so ruinous that an effort was made, and finally I obtained permission, to open a sand pit, which had long been closed, for fear of caving down a house, on the side of the hill above, by further excavation. An absolute refusal was at first given, but systematic perseverance again succeeded, and the pit was re-opened. The distance was comparatively short, but the price of mere hauling was so great, that I was forced to purchase horses and in not a few instances fill the carts with my own hands, and actually drive them to the top of the hill, thus demonstrating practically, how many loads could be fairly made in a day.

Another difficulty yet remained—no water could be found nearer than the foot of the hill, half a mile distant, and to haul all the water so great a distance would have cost a large sum. I selected one of the deepest ravines on the hill top, and throwing a dam across, while it was actually raining, I hae the pleasure of seeing it fill rapidly from the hill sides, and in this way an abundant supply was obtained for the mixing of mortar, at a very moderate expense of hauling.

Thus prepared the building was commenced, with two masons and one tender during the first week; at the close of the week I had raised sufficient funds to pay off my hands, and directed the foreman to employ for the following week two additional masons and a tender; to supply this force with materials several hands were employed in the quarry, in the lime kiln, and in the sand pit, all of whom were hired by the day, to be paid half cash and the balance in trade. During all this time, I may remark, that I was discharging my duties as Professor of Mathematics and Philosophy in the Cincinnati College, and teaching five hours in each day. Before eight o'clock in the morning I had visited all my workmen in the building, in the lime kiln, sand pit and stone quarry—at that hour my duties in the College commenced, and closed at one. By two o'clock P. M., I was again with my workmen, or engaged in raising the means of paying them on Saturday night. The third week the number of hands was again doubled, the fourth week produced a like increase, until finally not less than than fifty day laborers were actually engaged in the erection of the Cincinnati Observatory. Each Saturday night exhausted all my funds, but I commenced the next week in the full confidence that industry and perseverance would work out their legitimate results. To raise the cash means required, was the great difficulty. I have frequently made four or five trades to turn my due bills, payable in trade, into cash. I have not unfrequently gone to individuals and sold them their own due bills payable in merchandize, for cash, by making a discount. The pork merchants paid me cash for my due bills, payable in barrels and lard kegs, and in this way I managed to obtain sufficient cash means, to prosecute the work vigorously during the months of July and August, and in September I had the satisfaction to see the building up and covered, without having incurred one dollar of debt. At one period, I presume, one hundred hands were employed at the the same time in the prosecution of the work. More than fifty hands on the hill, and as many in the city in the various work-shops paying their subscribtions by work for different parts of the building. The doors were in the hands of one carpenter, the window frames in those of another—a third was employed on the sash—a painter took them from the joiner, and in turn delivered them to a glazier, while a carpenter paid his stock by hanging them, with weights purchased by stock, and with cords obtained in the same way. Many locks were furnished by our townsmen in payment of their subscriptions. Lumber, sawing, flooring, roofing, painting, mantels, steps, hearths, hardware, lathing, doors, window-glass, and painting, were in like mannner obtained. At the beginning of each week my master carpenter generally gave me a bill of lumber and materials wanted during the week. In case they had not been already subscribed, the stock book was resorted to, and there was no relaxing of effort until the necessary articles were obtained. If a tier of joists were wanted, the saw-mills were visited, and in some instances the joists for the same floor came from two or three different mills.

On covering the building, the great crowd of hands, employed as masons, tenders, limefburners, quarry-men, sand and water men, were paid off and discharged, and it now seemed that the heavy pressure was passed, and that one might again breathe free, after the responsibility of such heavy weekly payments was removed.

Having used as much space as is admissable, I conclude for the present, by referring to the following table, which will give, perhaps, a more correct

idea of the organization of the Cincinnati Astronomical Society than a labored description.

The members of the Society, so far as known, are divided as follows:

Judges,	6	Lockmakers and Bell Hangers,	3
Physicians,	25	Lumber Merchants,	18
Magistrates,	6	Livery Stable Keepers,	3
Lawyers,	33	Hardware Merchants,	7
Officers of Insurance Offices,	8	Steamboat Owners,	5
Persons living from rents,	34	Engineers,	2
Blacksmiths,	8	Engraver,	1
Iron and Brass Founders.	17	Plumbers,	2
Wholesale Grocers,	39	Lockmakers,	2
Retail "	17	Paperhangers,	7
Editors,	5	Stone Masons,	3
Teachers,	25	Brick Masons and Plasterers,	2
Clergymen,	5	Sawyers,	7
Dry Goods Dealers,	30	Butchers,	3
Bankers and Brokers,	21	Bookseller,	1
Clerks,	13	Hatters,	3
Leather Dealers and Tanners,	6	Horticulturists,	3
Iron Merchants,	16	Millers,	2
Pork Merchants,	16	Tinners,	2
Book Publishers,	2	Ice Dealer,	1
Druggists,	16	Architects,	2
Watchmakers,	4	Painters,	4
Carpenters and Joiners,	23	Farmers,	2
Tailors and Clothers,	6	Cooper,	1
Saddlers,	2	Brick Maker,	1
Crockery Merchants,	7	Lamp Dealers,	2
Hotel Keepers,	6	Matrass Makers,	2
Printers,	7	Man'fac's White Lead,	2
Shoemakers,	5	" Saleratus,	1
Cabinetmakers,	6	" Cotton Yarn,	2
Ship Builders,	4	" Oil Cloth,	1
Stone Cutters,	3	" Plows,	2
Wire Workers,	1	" Other articles,	9
		Carriage Makers,	4
		Remainder unknown.	

STRUCTURAL BOTANY,

Applied to Horticulture---Sap.

It is not, however, exclusively by the action of light and air that the nature of sap is altered. Evaporation from the leaves is constantly going on during the growth of a plant, and sometimes is so copious, that an individual will perspire its own weight of water in the course of twenty-four hours.

The loss thus occasioned by the leaves is supplied by crude fluid, a large portion of which is water, absorbed by the roots, and conveyed up the stem with great rapidity.

The consequence of such copious perspiration is the separation and solidification of the carbonized matter that is produced for the peculiar secretions of a species.

For the maintenance of a plant in health, it is indispensable that the supply of fluid by the roots should be continual and uninterrupted.

If any thing causes perspiration to take place faster than it can be counteracted by the absorption of fluid from the earth, plants will be dried up and perish.

Such causes are, destruction of spongioles, an insufficient quantity of fluid in the soil, an exposure of the spongioles to occasional dryness, and a dry atmosphere.

The most ready means of counteracting the evil consequences of an imperfect action of the roots is by preventing or diminishing evaporation.

This is to be effected by rendering the atmosphere extremely humid.

Thus, in curvilinear iron hot-houses, in which the atmosphere becomes so dry in consequence of the heat that plants perish, it is necessary that the air should be rendered extremely humid, by throwing water upon the pavement, or by introducing steam.

And in transplantation in dry weather, evergreens, or plants in leaf, often die, because the spongioles are destroyed, or so far injured in the operation as to be unable to act, while the leaves never cease to perspire.

The greater certainty of transplanting plants that have been growing in pots is from this latter circumstance intelligible;

While the utility of putting cuttings or newly transplanted seedlings into a shady damp atmosphere, is explained by the necessity of lessening evaporation produced by solar light.

The admission of air or ventilation, as it is called, is not generally well understood by gardeners. Much light has been thrown on this subject, since the invention of the air-tight boxes of Mr. Ward, in which, owing to the total exclusion of currents of air (ventilation) the evaporation from the surface of the earth and plants is constant, according to the heat, and the atmosphere is thus kept uniformly moist, not, as in green houses, moist all night and dried by ventilation all day. The only way of growing plants to perfection in rooms, is in these Ward's boxes—and the plants in most glass structures would thrive better with much less ventilation. The greater the heat the more moisture is required. The custom of gardeners seems preposterous, to deluge the floors of green houses with water to create a damp atmosphere, and then ventilate freely, which dries it up. This capricious change is very injurious to plants.

It is thought by some geologists, that the gigantic growth of the plants of former ages, of which such beautiful specimens are daily discovered in coal mines, was favored by the extreme heat and moisture with which the surface of the globe was then covered.

Mr. Knight, in a forcing house devoted to experiment, never gave air to his grapes until nearly ripe, even in hotest and brightest weather, farther than was just necessary to prevent the leaves being destroyed by excess of heat, and employed very little fire-heat. Many hot-houses are now built in Europe without any means of ventilation. It must be remembered, however, that dampness, unaccompanied by warmth and light, will produce fungi and all their injurious concomitants.

CUTTINGS.

When a separate portion of a plant is caused to produce new roots and branches, and to increase an individual, it is a cutting.

Cuttings are of two sorts,—cuttings properly so called, and *eyes*.

A cutting consists of an internodium, (space between bud and bud) or a part of one, with its nodus and leaf-bud.

When the internodium is plunged in the earth

it attracts fluid from the soil, and nourishes the bud until it can feed itself.

The bud, feeding at first upon the matter in the internodium, gradually elongates upwards into a branch, and sends organized matter downwards, which becomes roots.

As soon as it has established a communication with the soil, it becomes a new individual, exactly like that from which it was taken.

As it is the action of the leaf-buds that causes growth in a cutting, it follows that no cutting without a leaf-bud will grow;

Unless the cutting has great vitality and power of forming adventitious leaf-buds, which sometimes happens.

An eye is a leaf-bud without an internodium.

It only differs from a cutting in having no reservoir of food on which to exist, and in emitting its roots immediately from the base of the leaf-bud into the soil.

As cuttings will very often, if not always, develop leaves before any powerful connection is formed between them and the soil, they are peculiarly liable to suffer from perspiration.

Hence the importance of maintaining their atmosphere in an uniform state of humidity, as is effected by putting bell or other glasses over them.

In this case, however, it is necessary that if air-tight covers are employed, such as bell-glasses, they should be from time to time removed and replaced, for the sake of getting rid of excessive humidity.

Layers differ from cuttings in nothing except that they strike root into the soil while yet adhering to the parent plant.

Whatever is true of cuttings is true of layers, except that the latter are not liable to suffer by evaporation, because of their communication with the parent plant.

As cuttings strike roots into the earth by the action of leaves or leaf-buds, it might be supposed that they will strike most readily when the leaves of leaf-buds are in their greatest vigor.

Nevertheless, this power is controlled so much by the peculiar vital powers of different species, and by secondary considerations, that it is impossible to say that this is an absolute rule.

Thus Dahlias and other herbaceous plants will strike root freely when cuttings are very young; and Heaths, Azaleas, and other hard wooded plants, only when the wood has just begun to harden.

The former is, probably, owing to some specific vital excitability, the force of which we cannot appreciate; the latter either to a kind of torpor, which seems to seize such plants when their tissue is once emptied of fluid, or to a natural slowness to send downwards woody matter, whether for wood or not, which is the real cause of their wood being harder.

If ripened cuttings are upon the whole the most fitted for multiplication, it is because their tissue is less absorbent than when younger, and that they are less likely to suffer from either repletion or evaporation.

For to gorge tissue with food, before leaves are in action to decompose and assimilate it, is as prejudicial as to empty tissue by the action of leaves, before spongioles are prepared to replenish it.

For this reason pure silex, in which no stimulating substances are contained (silver sand,) is the best adapted for promoting the rooting of cuttings that strike with difficulty.

And for the same reason cuttings with what gardeners call a *heel* to them, or a piece of the older wood, strike root more readily than such as are not protected. The greater age of the tissue of the heel renders it less absorbent than tissue that is altogether newly formed.

It is to avoid the bad effect of evaporation that a proportion of the leaves are usually removed from a cutting, when it is first prepared.

The method of striking cuttings in double pots, the outer filled with earth in which cuttings are placed with the ends inserted in the earth touching the sides of the inner one, which is kept filled with water has for the above reason been attended with success.

The directions for propagating by cuttings in European publications, generally state the month for placing them in the earth; these directions would be apt to mislead in this country, where the difference of temperature ripens wood at a different period.

Cuttings will strike at any period of the year when the young wood is sufficiently ripe and the plant is continuing its growth, but not when it is in a state of rest.

A Glosgow antiquarian recently visited Cathcart Castle, and asked one of the villagers "if he knew anything of an *old story* about the building?" "Ay!" said the rustic, "there was anither auld *story*, but it fell down lang since."

Complaisance pleases all, prejudices none, adorns wit, renders humor agreeable, augments friendship, redoubles love, and, complying with justice and generosity, becomes the sacred charm of the society of mankind.

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TERMS.—*The* FARMER AND GARDENER *is published* SEMI-MONTHLY, *each number containing Sixteen royal octavo pages, at* ONE DOLLAR *per annum per copy;* SEVENTY-FIVE CENTS *per copy for Four and less than Ten copies; and* FIFTY CENTS *for Ten or more copies to the same Post Office. All subscriptions* IN ADVANCE.